

**Notice of Allowability**

Application No.

09/675,427

Applicant(s)

SAXENA ET AL.

Examiner

Art Unit

Herng-der Day

2128

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Replies received 8/23/04 and 4/11/05.
2. ☒ The allowed claim(s) is/are 1,4-6,9 and 10.
3. ☒ The drawings filed on 11 April 2005 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 5/21/01, 6/15/01, 10/5/01, 8/23/04.
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 04172005.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

*Thai Phan*  
Thai Phan  
Primary Examiner  
AU: 2128

### **DETAILED ACTION**

**1.** This communication is in response to Applicants' Reply to Office Action dated April 22, 2004, mailed August 23, 2004, and Applicants' Supplemental Reply faxed April 11, 2005.

**1-1.** Claims 1 and 6 have been amended. Claims 2, 3, 7, and 8 have been cancelled. Claims 1, 4-6, and 9-10 are pending.

**1-2.** Claims 1, 4-6, and 9-10 have been examined and allowed.

### ***Reasons for Allowance***

**2.** The following is an Examiner's statement of reasons for allowance:

**2-1.** The closest prior art of record discloses:

(1) A statistical model accounts for both intra-die and inter-die parameter variations (Michael et al., "A Flexible Statistical Model for CAD of Submicrometer Analog CMOS Integrated Circuits").

(2) A multivariable statistical analysis tool based on principal component analysis (PDF Solutions, Inc., "pdPCA Reference Manual").

(3) A method to analyze the impact of local process variations on the clock skew of VLSI circuits (Zanella et al., "Analysis of the Impact of Intra-Die Variance on Clock Skew").

**2-2.** Independent claim 1 is directed at a computer implemented method for statistical modeling and simulation of the impact of global variation and local mismatch on the performance of integrated circuits. Although a statistical model using principal component analysis to account for both parameter mismatch and inter-die parameter variations is obvious as

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disclosed in the publication of Michael et al., "A Flexible Statistical Model for CAD of Submicrometer Analog CMOS Integrated Circuits", this independent claim identifies the distinct combination of features of "(b) reducing the complexity of statistical simulation by performing a first level principal component or principal factor decomposition of global variation, including screening" and "(c) further reducing the complexity of statistical simulation by performing a second level principal component decomposition including screening for each factor retained in step (b) to represent local mismatch" as described at pages 8-10 of the specification.

Because the closest prior art does not teach or suggest performing a second level principal component decomposition including screening for each factor retained in step (b) to represent local mismatch, claim 1 is deemed allowable.

Dependent claims 4-5 are allowable as they depend on the allowed independent claim 1.

**2-3.** Independent claim 6 is directed at a computer implemented method integrated in a statistical design and optimization computer aided design tool to perform statistical simulation of joint and separate impact of global variation and local mismatch on performance of in integrated circuits. Although a statistical model using principal component analysis to account for both parameter mismatch and inter-die parameter variations is obvious as disclosed in the publication of Michael et al., "A Flexible Statistical Model for CAD of Submicrometer Analog CMOS Integrated Circuits", this independent claim identifies the distinct combination of features of "(b) reducing the complexity of statistical simulation by performing a first level principal component or principal factor decomposition of global variation, including screening" and "(c) further reducing the complexity of statistical simulation by performing a second level principal

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component decomposition including screening for each factor retained in step (b) to represent local mismatch” as described at pages 8-10 of the specification.

Because the closest prior art does not teach or suggest performing a second level principal component decomposition including screening for each factor retained in step (b) to represent local mismatch, claim 6 is deemed allowable.

Dependent claims 9-10 are allowable as they depend on the allowed independent claim 6.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

### *Conclusion*

4. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Herng-der Day whose telephone number is (571) 272-3777. The Examiner can normally be reached on 9:00 - 17:30. Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: (571) 272-2100.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Jean R. Homere can be reached on (571) 272-3780. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Herng-der Day *H.D.*  
April 17, 2005

*Thai Phan*  
Thai Phan  
Primary Examiner  
AU: 2128